VERBAL LOGIC

Published in India by

Index

Deductive Logic

What is Deductive Logic?

First of all it's not rocket science.

And it's made up of two words: Deductive and Logic.

Deductive is the adjective of Deduce which according to the Concise Oxford Dictionary means: arrive at (a fact or a conclusion) by reasoning.

Logic is defined as:

reasoning conducted or assessed according to strict principles of validity; the quality of being justifiable by reason; (the logic of) the course of action following as a necessary consequence of.

So Deductive Logic is the process by which we arrive at a conclusion with the help of reasoning.

This process comprises two parts:

Premises

Conclusion

Premises are nothing but the given facts. Note that in Logic there is a difference between facts and truths. Facts may or may not be true. However, in logic questions, we have to take them to be true as there is no way to verify whether the given premises are true or not. So if it is given that "all cats are dogs", you have to take it to be true. You can't say that how is it possible; "I haven't seen any cat which is a dog". If it is given, then you have to accept it in the context of the given question.

> Tip:
> Logic is not about content. It is about form. We don't have to question the given premises. We have to say – If the premises were true, would the conclusion follow.

A conclusion is the deduction that you make based on the given premises. If the given premises are taken to be true, the conclusion has to follow.

For example:
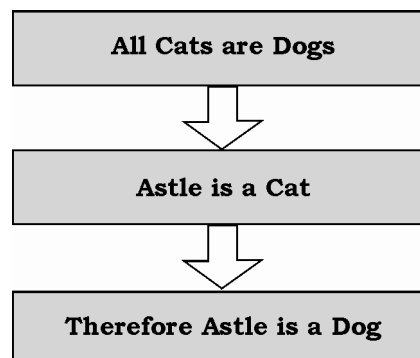
Syllogisms

In deductive reasoning, an argument is made based on two facts, or premises. If the premises are true, then it should follow that the conclusion of the argument must also be true. You also call such arguments **syllogisms**.

YOU HEAR DEDUCTIVE arguments, both good and bad, made all the time. In magazines, you read, "If you use Brand X detergent your clothes will not get clean. But our detergent works much better. Use our detergent and your clothes will get clean."On television, you hear a politician saying, "High taxes are putting people out of work. Tax cuts are a better policy. Tax cuts will give people jobs."At home, most people can remember a parent telling them, "If you do not finish your supper, you will not get dessert."

Understanding how these arguments work, and do not work, will help you to do two things. One, you will learn how to use deductive reasoning to construct your own strong arguments. Getting your point across accurately and forcefully will be easier. And two, you will be able to tell when someone else's argument is weak. You can't be influenced or persuaded by faulty reasoning when you recognize it and see its flaws. On the other hand, you will also be able to determine when someone has a strong argument that you should be influenced by.

Qualities of a Deductive Argument

- It has two premises that provide a guarantee of the truth of the conclusion by providing support for it that is so strong that, if the premises are true, it would be impossible for the conclusion to be false.

- It is described by the terms valid and invalid; when the premises are correct, and the conclusion that follows is correct, the argument is said to be valid. If the conclusion does not follow from the given premises, the argument is invalid.

- It is based on rules, laws, principles, or generalizations, as opposed to inductive arguments, whose major premises are based on observations or experiences.

Practice: Which of the following is an example of a deductive argument?

a. There are 25 CDs on the top shelf of my bookcase and 14 on the lower shelf. There are no other CDs in my bookcase. Therefore, there are 39 CDs in my bookcase.

b. Topeka is either in Kansas or Honduras. If Topeka is in Kansas, then Topeka is in North America. If Topeka is in Honduras, then Topeka is in Central America. Therefore, Topeka is in Kansas.

c. No one got an A on yesterday's test. Jimmy wasn't in school yesterday. Jimmy will make up the test today, and get an A.

d. All human beings are in favour of world peace. Terrorists don't care about world peace. Terrorists bring about destruction.

Answer: The answer is a, because it has two premises which are stated as generalizations or facts and a conclusion that follows logically from them. Choice b has three premises and the conclusion does not follow from them. Choices c and d have conclusions that do not follow the premises.

It is not difficult to figure out a deductive argument when it is presented as straightforwardly as the examples above. But that is not how you will see them much of the time. In order for you to be able to detect a deductive argument, and then determine whether or not it is valid, you must be able to figure out what the premises and the conclusion are. Let's look more closely at both of these parts that make up a deductive argument.

In Logic the words or terminology that is used could be – in fact it is – different from the terminology of everyday spoken language. So, be careful and don't try to confuse the meaning. Let's have a look at some common words:

1. **Some** A are B

What do you think the phrase means?

Well, if we look at the way the word "some" is used in everyday English, it generally implies that some A are B and some A are not B. For example if I say that Some boys in my class are intelligent, I mean that some boys are and some are not, intelligent. However this is not what the word "some" means in Logic.

> Note on the diagrams used:
> Let's take the help of Venn diagrams to understand it better. In all the figures given below, the hatched area represents populated area i.e. atleast 1 one element is present in the hatched area. The vertical hatched area represents A and the horizontal hatched area represents B. Obviously the intersection i.e. vertical & horizontal hatched area represents those elements that are A as well as B.

Some A are B is most commonly understood as:

Fig 1
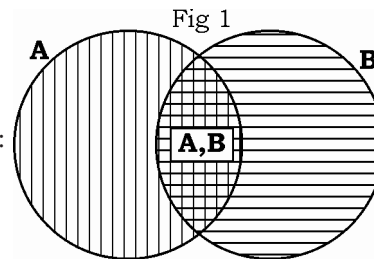
However, if you think about it, this is not the only way to represent it; what about:

Fig 2

And what about:

Fig 3
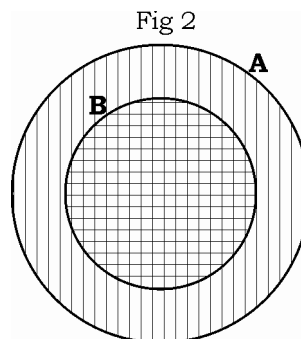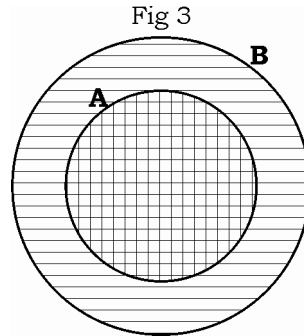
You might ask – how is this possible? The statement says "some", and not "all".

The answer to this will be – Does the statement say "some A are **not** B"; it only says "some A **are** B"; It could be "all". It might not be also – that's possible. The point is that all that the statement says is – Some A are B. Rest we don't know.

So the best inference that I can draw from the statement is this: At least one A is a B and vice-versa.
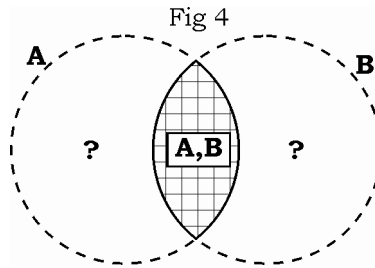
Fig 4

> Tip:
>
> A note on the above figure.
>
> The fig 4 encompasses all the possible scenarios as explained above depending on if the region marked with the ? are populated or not.
>
> If there are some A which are not B and some B which are not A, the figure becomes same as fig 1.
>
> If there are some A which are not B but all B are A, the figure becomes same as fig 2.
>
> If there are some B which are not A but all A are B, the figure becomes same as fig 3.
>
> One more scenario is when the set of A and B are identical i.e. the two circles overlap.

2. **Some** A are **not** B means:

If the meaning of the word 'some' as explained in 'Some A are B' is clear, you should immediately be able to realise that the most general situation for 'Some A are not B' is:

Fig 5
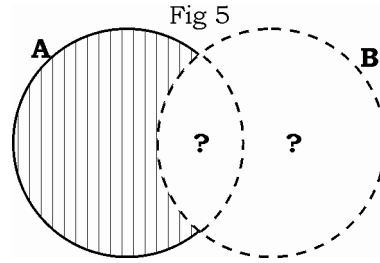
Which is to say that there is at least one A which is not a B. So just like above case, there are many possible scenarios, as seen below:

It is possible that no A are B –

Fig 6
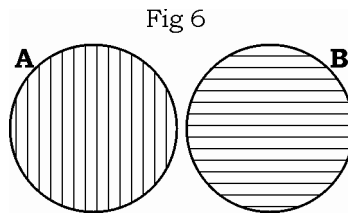
The following scenarios are also possible:

Fig 2

Fig 1

3. **All** A are B

Fig 3
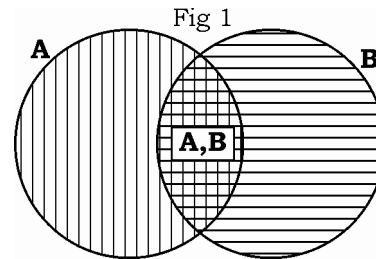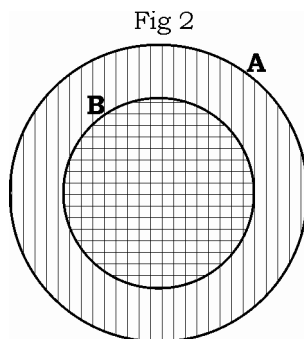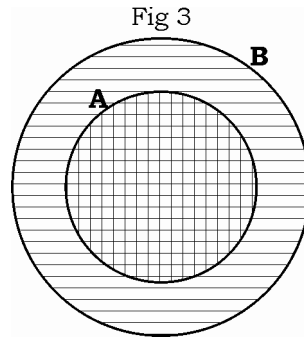
Does it also mean Some B are not A?

If your answer was – No, then you're right; cause A and B could be equal.

Fig 7

4. **No** A are B

Fig 6
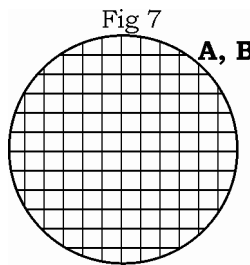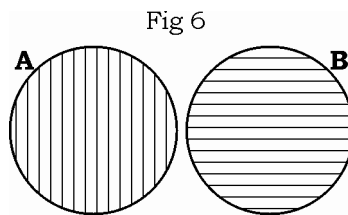
There is **no** connection between A and B. It also means that 'No B are A'. Only one venn diagram is possible.

Conditionals

The second type of deductive arguments are called **conditionals**. These are formed by combining two sentences with the help of the words **... if ... then ...** or else **... only if ... then ...**

1. **If ...... then ......**

If you study hard, you will get through the institute of your choice.

What is the meaning of the above statement?

Usually four possible combinations of 'studying hard' and 'getting through' can be asked to be judged?

Does 'studying hard' imply 'got through'?

Does 'getting through' imply 'studied hard'?

Does 'Not studying hard' imply 'Not getting through'?

Does 'Not getting through' imply 'Not studying hard'?

Let's break the sentence it into parts:

1. Suppose you study hard; Would you or would you not get through the institute of your choice?

    Of course you will. That is written in the statement. Read it again – *If you study hard* implies <u>whenever</u> or <u>every time</u> or <u>each time</u> you study hard.

2. What about – you got through the institute of your choice? Did you or did you not study hard?

    You can't say as the statement does not say, "Only if you study hard". So there can be a million other ways to get through; however *if you study hard* you definitely will.

3. What if you didn't study hard?

    Again, if you've understood point 2, the statement does not say, "only if". Studying hard is a definite way, but not the only one. So you can't conclude either way.

4. And last, what if you didn't get through the institute of your choice?

    Think carefully. If you had studied hard, you would have gotten through the institute of your choice. So if you didn't get through the institute of your choice, you didn't study hard – at least.

So let's have a symbolic representation:

With "If P then Q" ......

P implies Q	is a Logical Necessity
Q implies P	is a Logical Possibility
'Not P' implies 'Not Q'	is a Logical Possibility
'Not Q' implies 'Not P'	is a Logical Necessity

If you're wondering what do phrases like "logical necessity" etc mean, then remember that any conclusions in logic is one of the three possibilities:

Logically Necessary: Has to happen. Will happen.

Logically Possible: May or may not happen. Probable.

Logically Impossible: Cannot happen. Won't happen.

The following example illustrates the use of these symbolic representations.

If <u>you attend camp HiLow</u> , <u>you will lose weight</u>
    $\qquad\qquad$ *P* $\qquad\qquad\qquad$ *Q*

You attend Camp HiLow i.e. P implies Q i.e. you lose weight.

If <u>Jason stays back after class to speak with his professor</u> , <u>he will miss the bus</u>
    $\qquad\qquad\qquad\qquad$ *P* $\qquad\qquad\qquad\qquad\qquad\qquad$ *Q*

Jason did not miss the bus i.e. 'Not Q' implies 'Not P' i.e. Jason did not stay after class to speak with the professor.

Syllogisms & Conditionals:

Syllogisms and Conditionals are not two totally different concepts. They are the same concept, just worded differently.

Consider the conditional – "If P then Q". We can also consider P and Q as sets (depicted using venn diagram and convert this conditional to a syllogism – All P are Q. Here the venn diagram will be:
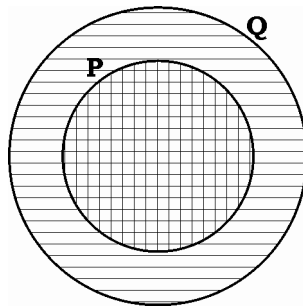
With the above figure, we arrive at the same conclusions:

P implies Q

'Not Q' implies 'Not P'

With 'Not P' we cannot arrive at any logical necessity, it could be Q or 'Not Q'

And with Q also we cannot arrive at any logical necessity, it could be P or 'Not P'.

Takshzila
The centre of learning

Practice: Consider the following example, and state it as a syllogism and as well as a conditional deductive argument:

Samsa says that all his test scores are good, so the grades for his courses should be good, too.

Syllogism:

_____

_____

_____

Conditional:

_____

_____

_____

Answers:

Syllogism: All good test scores mean good course grades. Samsa's test scores are all good. Samsa gets good course grades.

Conditional: If you get good test scores, then you get good course grades. Samsa gets good test scores. Therefore, he gets good course grades.

2. **Only if ...... then ......**

Only if you study hard, you will get through the institute of your choice.

What is the meaning of this sentence now?

It does not mean what you might think i.e. 'if you study hard then you will get through the institute of your choice'.

What it means is that if you finally get through the institute of your choice then you had studied hard – for sure; however studying hard is not a guarantee for getting through. You might study hard and still not get through.

Only if P then Q means ......

P implies Q	is a Logical Possibility
Q implies P	is a Logical Necessity
'Not P' implies 'Not Q'	is a Logical Necessity
'Not Q' implies 'Not P'	is a Logical Possibility

Venn Representation:

The venn representation of "Only if P then Q" is
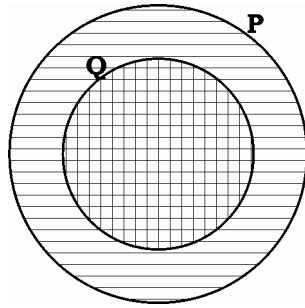
And the syllogism equivalent is "All Q are P"

Check if the following conclusions are valid based on the above figure:

P could imply either Q or even 'Not Q' but Q implies P necessarily.

'Not P' implies 'Not Q' necessarily but 'Not Q' could imply 'Not P' or even P.

Necessary & Sufficient conditions.

One could also look at the statements "If P then Q" and "Only if P then Q" in a different way than symbolic representation or syllogisms – that of necessary and sufficient conditions.

A necessary condition is something that has to be present for an outcome to happen. But the necessary condition DOES NOT guarantee the outcome.

A sufficient condition guarantees the outcome. But it is not necessary for the condition to be present – the outcome is also possible by other conditions.

'If P then Q' suggest that P is a sufficient condition.

Thus, P occurs is sufficient for Q to occur. But P not occurring does not mean Q does not occur (P is a sufficient condition, not a necessary condition), Q may occur for other reasons as well. By the same logic Q occurs does not mean P necessarily has occurred. But Q did not occur means that P did not occur (remember P is a sufficient condition, it being present irrespective of others would have caused Q)

'Only if P then Q' suggests that P is a necessary condition.

P being necessary suggests that if Q occurs then P has to have occurred. But if Q did not occur, P could have been present or not (P does not guarantee, it is not sufficient, it is only necessary). On same thoughts, P occurring can be accompanied with Q occurring or not occurring. But P not occurring, necessary condition not being present, necessitates that Q has not occurred.

3. **If and only if** P **then** Q

In Logic this means that all the four possible conclusions regarding P or 'Not P' and Q or 'Not Q' are logical necessities.

P implies Q   is a Logical Necessity

Q implies P   is a Logical Necessity

'Not P' implies 'Not Q'   is a Logical Necessity

'Not Q' implies 'Not P'   is a Logical Necessity

4. **Either** A or B

In Logic the meaning of "either" is not the same as it is in colloquial language, where it means that if one is happening then the other is not happening. In logic it means that both can happen at the same time. It's a logical possibility. However if one is not happening, the other has to happen as it is given "either A or B".

Consider this example: Either he has left or got hit by a car

If you think about it, both can happen at the same time. He could have left and then got hit by a car.

Either A or B means:

A implies B   is a Logical Possibility

B implies A   is a Logical Possibility

'Not A' implies B   is a Logical Necessity

'Not B' implies A   is a Logical Necessity

You might ask – What about sentences like "Either he is in Delhi or in Shimla"; It means that if he is in Delhi, then he is not in Shimla.

The thing is that in this case you are taking the help of an unstated or implied premise viz. *One cannot be in two places at the same time.* This implied premise is known as *enthymeme* in Logic. Without the help of this you wouldn't have been able to reach the above conclusion.

In Short

Deductive reasoning takes two premises, which may be rules, laws, principles, or generalizations, and forms a conclusion based upon them. In order to be valid, a deductive argument must have a conclusion that logically follows from the given premises, without trying to go beyond them. When you understand how these arguments work, you will know how to construct your own strong arguments. You will also avoid being influenced or persuaded by faulty deductive reasoning when you recognize it and see its flaws.

Skill Building Until Next Time

• Find a deductive argument in print. Put it in the form of a diagram, listing the major premise, minor premise, and conclusion. Is it valid? If not, why?

• The next time you need to persuade someone to do something, such as eat at your favourite restaurant instead of theirs or see the movie you prefer, argue for your choice using deductive reasoning.

Deductive Logic Class Exercise

Directions for questions 1 to 5: In the given questions, which of the following are valid arguments?

1. A. Some printers are fast. No fast is slow. No printer is slow.

    B. No poet is a thinker. Some thinkers are leaders. No leader is a poet.

    C. No poet is a thinker. Some thinkers are leaders. Some leaders are not poets.

    D. Only cats are dogs. No cat is a pig. No dog is a pig.

    a. A   b. B and C   c. C and D   d. B

2. A. All music is good. All good is great. All music is great.

    B. All men are wise. All wise are leaders. All leaders are men.

    C. All men are wise. All wise are leaders. Some men are leaders.

    D. All boys are men. Some men are smart. Some boys are smart.

    a. A   b. B   c. D   d. A & C

3. A. I go out only on Sundays. Today is a Sunday. I am out.

    B. I go out only on Sundays. Today is not a Sunday. I am not out.

    C. I go out only on Sundays. I am out. Today is a Sunday.

    D. I go out only on Sundays. I am not out. It is not a Sunday.

    a. B and C   b. B   c. A and D   d. A

4. A. All princes have moles. Raj has a mole. Raj is a prince.

    B. All princes have moles. Raj is a prince. Raj has a mole.

    C. Only princes have moles. Raj is a prince. Raj has a mole.

    D. No princes have moles. Raj is not a prince. Raj does not have a mole.

    a. B   b. C and D   c. A and D   d. C

5. A. Raj has a mole. Raj is a prince. All princes have moles.

    B. All kings are men. All men are weak. Some weak are kings.

    C. All kings are men. All men are weak. All king are weak.

    D. All kings are men. All men are weak. All weak are kings.

    a. A   b. B and C   c. C and D   d. D

Directions for questions 6 to 10: In each question below, there are two statements followed by two conclusions numbered 1 and 2. You have to decide which of the given conclusions logically follows from the statements given. Answer options are

a. If only conclusion 1 follows   b. If only conclusion 2 follows

c. If neither 1 nor 2 follows   d. If both 1 and 2 follow

6. Statements: 1. All cars are cats.   2. All fans are cats.

    Conclusions: 1. All cars are fans.   2. Some fans are cars.

7. Statements: 1. Some scooters are trucks.   2. All trucks are trains.

    Conclusions: 1. Some scooters are trains.   2. No truck is a scooter.

8. Statements: 1. All pencils are pens.   2. No pen is a book.

    Conclusions: 1. No pencil is a book.   2. Some pencils are books.

9. Statements: 1. Some rats are rabbits.   2. All rats are mosquitoes.

    Conclusions: 1. Some mosquitoes are rabbits. 2. No rabbit is a mosquito.

10. Statements: 1. All fans are cups.   2. All cups are pillows.

    Conclusions: 1. All fans are pillows.   2. All pillows are fans.

Directions for questions 11 to 15: In each of the questions given below, a set of six statements is given followed by four answer choices. Each of the choices has a combination of three statements from the given statements. Identify the answer choice in which the third statement is a valid conclusion based on the first two.

11. A. All green is blue.   B. All green is white.

    C. All green is black.   D. All black is white.

    E. All blue is yellow.   F. All blue is white.

      a. ABF   b. AEF   c. CDB   d. CBE

12. A. All copper is metal.   B. All bronze is non metal.

    C. Some metal is silver.   D. Some metal is not silver.

    E. No copper is bronze.   F. Some silver is not metal.

      a. ABF   b. ACB   c. ABE   d. CDF

13. A. All beaters cheat.   B. All teachers cheat.

    C. Some teachers teach.   D. Some teachers beat.

    E. Some teachers beat and cheat.   F. Some beaters cheat.

      a. AFC   b. BDE   c. CDE   d. FAB

Takshzila
The centre of learning
www.takshzila.com

14. A. Some communists are socialists.   B. All socialists are Leninists.

    C. Some socialists are Leninists.   D. Marxists are not capitalists.

    E. All Leninists are communists.   F. All communists are socialists.

       a. CEA   b. CEF   c. ABE   d. BEF

15. A. All Sitas lie.   B. Some Sitas are girls.

    C. All girls are Sitas.   D. Some girls lie.

    E. All girls lie.   F. All liars are girls.

       a. ABC   b. BCD   c. BCE   d. CAE

Directions for questions for 16 to 25: Each question has a main sentence followed by four sentences labeled as a, b, c and d. Choose the ordered pair of statements where the first statement implies the second and both the statements are logically consistent with the main statement.

16. If it is not a real Havana, it is not a Ropo.

    A. It is a real Havana   B. It is not a real Havana

    C. It is not a Ropo   D. It is a Ropo

       a. AD   b. CB   c. DA   d. BD

17. You are allowed to enter only if you are a member.

    A. You are allowed to enter.   B. You are not allowed to enter

    C. You are a member   D. You are not a member.

       a. BD   b. CA   c. BC   d. AC

18. If you are facing the sun, you cannot see your shadow.

    A. You cannot see your shadow.   B. You can see your shadow.

    C. You are facing the sun.   D. You are not facing the sun.

       a. AC   b. DB   c. CA   d. DA

19. Nothing is both safe and exciting.

    A. Bungee jumping is not safe.   B. Bungee jumping is safe.

    C. Bungee jumping is not exciting.   D. Bungee jumping is exciting.

       a. AD   b. CB   c. BC   d. both (a) and (b).

20. Either he is not a fool or I am not wise.

    A. I am wise.   B. He is a fool.

    C. I am not wise.   D. He is not a fool.

       a. BC   b. DA   c. CB   d. BA

21. One is either not married or happy.

   A. One is not married.   B. One is married.

   C. One is not happy.   D. One is happy.

    a. BC   b. BD   c. CA   d. both (b) and (c).

22. Unless both Iran and Libya raise the price of oil neither of them does.

   A. Iran raises the price of oil   B. Libya raises the price of oil

   C. Iran does not raise the price of oil. D. Libya does not raise the price of oil.

    a. AD   b. DA   c. AB   d. CB

23. All styles are good except the tiresome.

   A. The style is tiresome   B. The style is not tiresome

   C. The style is good   D. The style is not good.

    a. BC   b. DA   c. AD   d. All of the above

24. For Manchester United to reach the final it is sufficient that Chelsea draws its match.

   A. Manchester United reaches the final.   B. Manchester United does not reach the final.

   C. Chelsea draws its match.   D. Chelsea does not draw its match.

    a. AC   b. DB   c. CA   d. AD

25. For Manchester United to reach the final it is necessary that Chelsea draws its match.

   A. Manchester United reaches the final.   B. Manchester United does not reach the final.

   C. Chelsea draws its match.   D. Chelsea does not draw its match.

    a. AC   b. BD   c. CA   d. AD

Critical Reasoning

If we call what we did in Deductive Reasoning Chapter as *theoretical logic* then Critical Reasoning (CR) is nothing but *applied logic*. That is when we start being deductive or objective in our day to day activities instead of being subjective, the process is called Critical Reasoning. Even while being subjective we try, as much as possible, to keep our reasons objective; as against reasons like: *It's my life* or *that's the way I think/I am* etc.

In tests a CR question typically looks like:

Argument
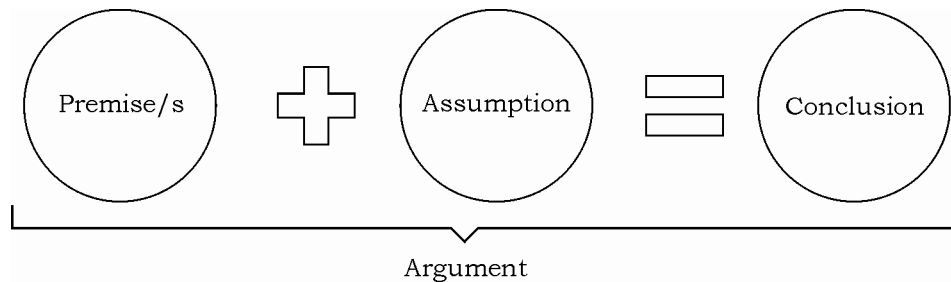
What does Critical Reasoning test?

As the name implies, critical reasoning tests your reasoning power, and you will learn a lot about reasoning in this chapter. However, you are not supposed to know the technicalities of Logic or anything in formal Logic. You would not, for example, be asked to define categorical syllogism or petitio principii, but you might be asked to recognize that:

All tigers are mammals.

All mammals are warm-blooded creatures.

Therefore, all tigers are warm-blooded creatures.

is a valid argument. By the way, the above argument, technically speaking, is a categorical syllogism

You might also be asked to show that you understand that:

Shakespeare was a better playwright than Shaw. Clearly, Shakespeare's plays are better, so the conclusion that Shakespeare was a better playwright than Shaw is unavoidable.

is a specious argument because it simply begs the question. Again, technically speaking, the above argument, is a petitio principii)

Overview of Terminology

Argument

As must be clear from the above figure an argument is a set of two or more premises leading to a conclusion. An argument is said to be valid if the premises, if true, definitely lead to the conclusion. It is considered invalid if the given premises are not enough or sufficient to reach the given conclusion.
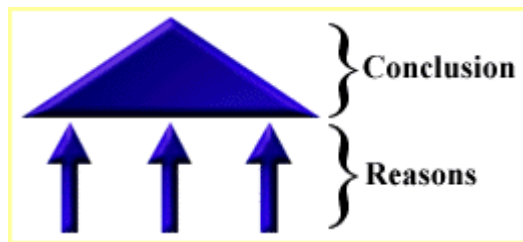
Valid Argument:

All scientists are intelligent. Hawking is a scientist. So Hawking is intelligent.

Invalid argument:

All scientists are intelligent. Hawking is intelligent. So Hawking is a scientist.

The second argument is invalid because there is no premise that states that all intelligent are scientists.

Visually, an argument looks like this:

The reasons are like pillars which support the roof or conclusion.

Premise

A premise is defined as a statement that is assumed to be true and from which a conclusion can be drawn. Note that it is *assumed to be true.* It may or may not be true. So in CR questions we can't question the premises; we take them to be true.

In the first example given in the discussion of the argument:

All scientists are intelligent and *Hawking is a scientist* are the premises

Tip:

Logic is not about content; it is about form. Logic is not concerned with whether the given premises are true or not. Logic is concerned that if the given premises were true, would the conclusion follow or not

Concluson

A conclusion is defined as the necessary consequence derived from or supported by premises

So the conclusion of the above 1st argument is *So Hawking is intelligent*

Inference

Inference is a deduction or conclusion derived from specific information. An inference is implied or suggested rather than stated outright. You can call it an *implied* conclusion. Most people have come to believe that the word inference means probably true or likely to be true. Indeed, in common usage infer is often used in this manner. However in logic, an inference can be defined as something that *must be true*. Thus, if you are asked to identify an inference of the argument, you must find an item that must be true based on the information presented in the argument.

Suppose one of the given pieces of information is that *those who go for a rock concert are rock music fans* and another is that *rock music fans are usually rebellious.* Bases on this information what can you infer about Shikha who went for the show of rock band Pearl Jam.

If your answer is – There is a high possibility of Shikha being rebellious – you're right.

However what if I change the second premise to *Shikha is quite rebellious*; would you be able to infer that Shikha is a rock music fan?

You can't, because there is no premise that states that anyone who is rebellious is a rock music fan or that no one else can be rebellious.

> Tip:
> More often than not inference and conclusion are used interchangeably in CR.

Assumption

An assumption is a presupposition, or the basis of an assertion, required to be true for the assertion to be true. Assumptions are unstated or even unknown, but implied by the associated theory or argument. So you can call an assumption an *implied* premise. In argumentation, an assumption is simply the same as an unstated premise—what *must be true* in order for the argument to be true. Assumptions can often have a great effect on the validity of the argument. Look at this example:

> *Rich countries have more capital to invest than poor countries. Therefore, rich countries will invest in poor countries.*
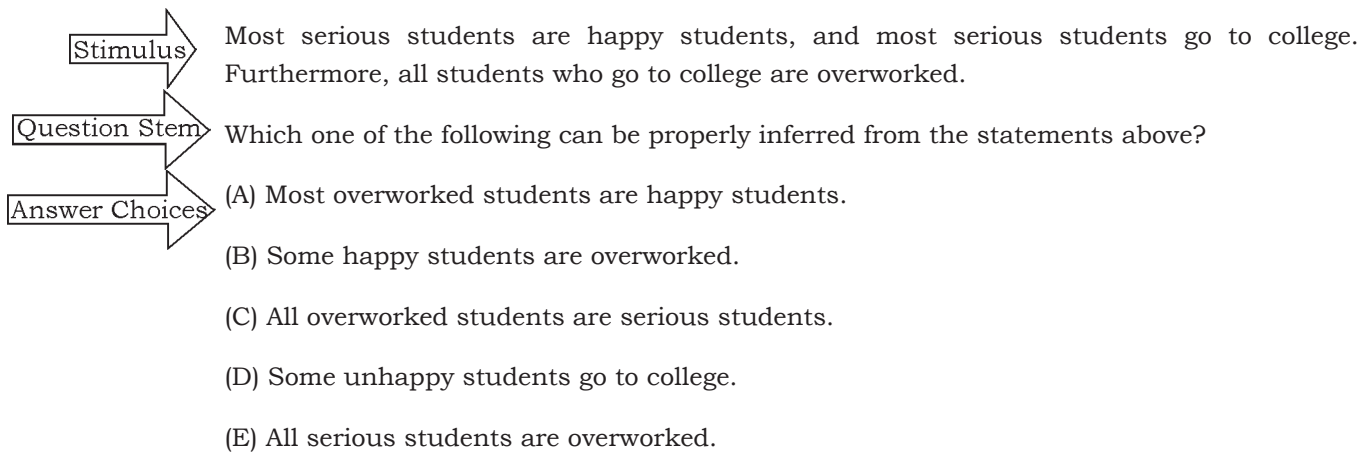
What is the argument assuming? That if X has more capital than Y then X will invest in Y. Now this assumption may or may not be true and so the conclusion is standing on very shaky grounds.

> **Tip:**
>
> Separating an inference from an assumption can be difficult because the definition of each refers to what "must be true." The difference is simple: an inference is what follows from an argument (in other words, a conclusion) whereas an assumption is what is taken for granted while making an argument. In one sense, an assumption occurs "before" the argument, that is while the argument is being made. An inference is made "after" the argument is complete, and follows from the argument. *Authors make assumptions when creating their arguments, and all arguments have inferences that can be derived from the argument.*

Anatomy of Critical Reasoning Questions

Every Critical Reasoning question contains three separate parts: the stimulus, the question stem, and the four or five answer choices. The following diagram identifies each part:

Stimulus Most serious students are happy students, and most serious students go to college. Furthermore, all students who go to college are overworked.

Question Stem Which one of the following can be properly inferred from the statements above?

Answer Choices (A) Most overworked students are happy students.

(B) Some happy students are overworked.

(C) All overworked students are serious students.

(D) Some unhappy students go to college.

(E) All serious students are overworked.

Stimulus Material

Stimulus material is the "content" of the item. Stimulus material is an initial paragraph or statement that presents an argument or otherwise states a position. It is the main thing minus the question stem. The stimulus material can be about almost anything including a scientific discovery, result of a survey, ethical dilemma, a philosophical conundrum, or a financial disaster.

But you don't need any special knowledge. Everything you need to know is right there in the stimulus material. In fact if you do use your knowledge you are more likely to get the answer wrong than right.

Question Stem

This stem is the "question." It may come in the form of a question, or it may come in the form of an instruction. Either way, the stem tells you what to do with the stimulus material. It may ask you to do any one of the following:

Takshzila
The centre of learning

• Identify the conclusion of an argument.

• Point out a premise of an argument.

• Identify strengths or weaknesses in an argument.

• Recognize parallel reasoning.

• Evaluate evidence.

• Draw conclusions and make inferences.

Answer Choices

The answer choices are the possible "responses" to the stem. One of them is the "credited" response or right answer. The wrong answers are known as "distracters" because they are carefully written to distract your attention away from the right answer. In essence, they provide the camouflage in which the test-writers hide the right response.

Here are the directions for critical reasoning questions, together with a sample question and its explanation.

Example of a typical CAT critical reasoning question:

E.g.: Read each of the following passages and answer the questions that follow it:

People with high blood pressure are generally more nervous and anxious than people who do not have high blood pressure. This fact shows that this particular combination of personality traits—the so called hypertensive personality—is likely to cause a person with these traits to develop high blood pressure.

The reasoning in the argument is flawed on the grounds that the argument

(A) fails to define the term "hypertensive personality"

(B) presupposes that people have permanent personality traits

(C) simply restates the claim that there is a "hypertensive personality" without providing evidence to support that claim.

(D) takes a correlation between personality traits and high blood pressure as proof that the traits cause high blood pressure.

(E) focuses on nervousness and anxiety only, ignoring other personality traits that people with high blood pressure might have

Takshzila
The centre of learning
www.takshzila.com

Explanation:

The structure of the above argument can be represented as:

Premise 1: People with high blood pressure are generally more nervous and anxious than people who do not have high blood pressure.

Premise 2: This particular combination of personality traits is called the hypertensive personality.

Conclusion: The hypertensive personality is likely to cause a person to develop high blood pressure.

The premises indicate that certain individuals have both high blood pressure and the hypertensive personality. From this information we cannot draw any conclusions, but the author makes the classic error of concluding that one of the conditions causes the other. Your job is to find the answer that describes this error of reasoning.

Question stem:

'The reasoning in the argument is flawed on the grounds that the argument'

The stem tells you that author has made a mistake and asks that you identify the error.

Answer choices:

Answer choice (A): This is an Opposite answer because the stimulus defines the hypertensive personality as one with the traits of nervousness and anxiety.

Answer choice (B): The permanence of the traits is not an issue in the stimulus.

Answer choice (C): Although the argument does act as described in this answer choice, this is not an error. In these types of questions, authors have the right to make premises that contain certain claims. Remember, the focus is not on the premises but where the author goes with the argument once a premise is created.

Answer choice (D): This is the correct answer.

This answer choice describes a classic error of causality: two events occurring simultaneously are mistakenly interpreted to be in a causal relationship (i.e. one causes the other). There are many other possibilities for the arrangement: the two events could be caused by a third event (for example, genetics could cause both a hypertensive personality and high blood pressure), the events could be reversed (the high blood pressure could actually cause the hypertensive personality), or there may be situations where the two do not occur together.

Answer choice (E): Although the argument does act as described in this answer choice, this is not an error. The author is allowed to focus on nervousness and anxiety to the exclusion of other traits. To analogize, imagine a speaker says, "The Indian Cricket Team has bad attitude and this makes them a bad team." The Indian Cricket Team might also wear blue, but the speaker is not obligated to mention that trait when discussing why the Indians are a bad cricket team. In much the same way, the author of this stimulus is not obligated to mention other traits people with high blood-pressure may have.

Answering Critical Reasoning Questions?

Here's a simple, six-step plan that can help you solve critical reasoning questions.

Read the conclusion.

Read the premises.

Figure out the assumption

Read the question.

Predict the answer.

Find the right answer.

Let's look at these steps in more detail.

Read the conclusion:

In analyzing an argument, you should first look for the conclusion, which is the main point of the argument. The conclusion is often the last sentence of an argument, but not always. Sometimes the conclusion appears as the first sentence.

> **Tip:**
> The most common "indicator words" for a conclusion are:
>
> | | | | |
> |---|---|---|---|
> | Therefore | So | As a result | Thus |
> | Suggests | Consequently | Indicates | Hence |
> | Accordingly | It follows that | | |

Read the premises:

After finding the conclusion, look for the premises that lead to the conclusion. Premises include ALL the pieces of information in the argument (except the conclusion). Premises provide evidence that supports, or leads to, the conclusion.

> **Tip:**
> Premises can also be recognized by certain "indicator words". The most common indicator words are:
>
> | | | | |
> |---|---|---|---|
> | Since | Because | Due to | Given that |

Figure out the assumption:

This is easier said than done. The fact that an assumption is an unstated premise seems fairly straightforward and so you might imagine that figuring out the assumption is not that big a deal. However if a given conclusion is based on very strong premises and the gap

between the premises and the conclusion is not that wide, then it is quite possible that you might miss it. So here is a good way to go about this:

After reading the conclusion and the premises, ask yourself – *What more can I say to support this particular conclusion?* If you don't take the help of outside information or of your knowledge then your answer will be very close to the assumption.

Let's have a look at an example:

Vehicles use fuels like petrol and diesel which cause a lot of pollution and threaten the environment with global warming. Fuels like CNG and methanol are much cleaner. Therefore replacement of petrol and diesel fuels in vehicles with the cleaner ones will save us from global warming.

Conclusion: Therefore replacement of petrol and diesel fuels in vehicles with the cleaner ones will save us from global warming.

Premise 1: Vehicles use fuels like petrol and diesel which cause a lot of pollution and threaten the environment with global warming.

> **Premise 2**: Fuels like CNG and methanol are much cleaner.
>
> What more can you say here to support the conclusion?
>
> What about – vehicular pollution is the only major threat to global warming.

This makes sense because if vehicular pollution is *not* the only major threat to global warming then reducing it won't really save us from global warming.

Read the question:

The next step after figuring out the assumption is to read the question. If the question asks you to strengthen the argument, then you need to pick up an answer choice that is the assumption or paraphrases the assumption; if the question asks you to weaken the argument then you need to pick up an answer that negates the assumption.

Predict the answer:

Predicting the answer is a smart thing to do as this will help you target the right answer with ease.

Find the right answer:

If you have effectively paraphrased an answer, then you should be able to identify the correct answer fairly easily.

Types of Critical Reasoning Questions

Some of the most commonly asked questions in Critical Reasoning are:

1. Weaken the Argument

2. Strengthen the Argument

3. Identify the Assumption

4. Draw the Inference

5. Draw the Conclusion

6. Complete the passage

Weaken an argument

Weaken questions require you to select the answer choice that undermines the author's argument as decisively as possible.

As has already been mentioned, in these types of questions you first need to figure out the assumption and then pick up an answer choice that negates this assumption.

The stimuli for weaken questions contain errors of assumption. This makes sense, because the easiest argument to weaken is one that already has a flaw. Typically, the author will fail to consider other possibilities or leave out a key piece of information. In this sense the author assumes that these elements do not exist when he or she makes the conclusion, and if you see a gap or hole in the argument immediately consider that the correct answer might attack this hole.

As you consider possible answers, always look for the one that attacks the way the author arrived at the conclusion. Do not worry about the premises (remember we can't question the premises) and instead focus on the effect the answer has on the conclusion.

Let's have a look at an example:

> **E.g.:** Siddhartha is clearly an incompetent detective. He has solved a smaller percentage of the cases assigned to him in the last 3 years—only 1 out of 25—than any other detective on the police force.
>
> Which one of the following, if true, most seriously weakens the argument above?
>
> (A) Because the police chief regards Siddhartha as the most capable detective, she assigns him only the most difficult cases, ones that others have failed to solve.
>
> (B) Before he became a detective, Siddhartha was a neighbourhood police officer and was highly respected by the residents of the neighbourhood he patrolled.

(C) Detectives on the police force on which Siddhartha serves are provided with extensive resources, including the use of a large computer database, to help them solve crimes.

(D) Siddhartha was previously a detective in a police department in another city, and in the 4 years he spent there, he solved only 1 out of 30 crimes.

The stimulus uses a premise about success rate to form a conclusion about Siddhartha's competency as a detective. Ask yourself—does the premise prove the conclusion? No, because there are many factors that could have affected Siddhartha's performance. In this sense, the stimulus has incomplete information, and we should try to discover a relevant piece of information in one of the answer choices that will shed more light on why Siddhartha's success rate is so low. Use this knowledge to make a general paraphrase that indicates you are looking for a piece of information that shows Siddhartha's success rate is not as low as it seems or that other factors limited Siddhartha's performance.

Answer choice (A): This is the correct answer. We discover that Siddhartha receives the hardest cases, and one would expect that the hardest cases would yield a lower success rate. Notice that this answer does not attack the premises. Even though they are still true, the conclusion is undermined by the new evidence. This is typical of most Weaken questions answers—the premises are not addressed and the focus is on the conclusion.

Answer choice (B): This answer is irrelevant. It tries to use the opinion of others about Siddhartha's performance in one capacity to refute facts about his performance in another capacity.

Answer choice (C): This is an Opposite answer that strengthens the claim that Siddhartha is incompetent by showing that Siddhartha was not deprived of certain resources for solving cases.

Answer choice (D): This is another Opposite answer that strengthens the claim that Siddhartha is incompetent. This time, the answer shows that Siddhartha has a previous record of poor performance.

> Tip:
>
> There is one more thing you need to remember about weaken and even strengthen questions and that is that the questions stem says: Which one of the following, if true, ...?
>
> This means that the answer choices are accepted as given, even if they include "new" information. Weaken or strengthen answer choices can bring into consideration information outside of or tangential to the stimulus. Just because a fact or idea is not mentioned in the stimulus is not grounds for dismissing an answer choice. Your task is to determine which answer choice best attacks the argument in the stilmulus.

Now let's have a look at a little tougher question:

E.g.: Beverage company representative: The plastic rings that hold six-packs of beverage cans together pose a threat to wild animals, which often become entangled in the discarded rings and suffocate as a result. Following our lead, all beverage companies will soon use only those rings consisting of a new plastic that disintegrates after only three days' exposure to sunlight. Once we all complete the switchover from the old to the new plastic rings, therefore, the threat of suffocation that plastic rings pose to wild animals will be eliminated.

Which one of the following, if true, most seriously weakens the representative's argument?

(A) The switchover to the new plastic rings will take at least two more years to complete.

(B) After the beverage companies have switched over to the new plastic rings, a substantial number of the old plastic rings will persist in most aquatic and woodland environments.

(C) The new plastic rings are slightly less expensive than the old rings.

(D) The new plastic rings rarely disintegrate during shipping of beverage six-packs because most trucks that transport canned beverages protect their cargo from sunlight.

(E) The new plastic rings disintegrate into substances that are harmful to aquatic animals when ingested in substantial quantities by them.

The conclusion of this argument is the final sentence, which contains the conclusion indicator "therefore," and the conclusion contains a qualification that the threat of suffocation will be eliminated after the switchover is complete. The premises supporting this conclusion are that the new plastic rings will be used by all companies and that the rings disintegrate after three days' exposure to sunlight. Ask yourself—are there any holes in this argument? Yes, there are several. The most obvious is, "What if an animal becomes entangled in the new rings before they can disintegrate?" Anyway this one is not one of the answer choices here.

Answer choice (A): This answer does not hurt the argument because the author qualified the conclusion to account for the date of the switchover, thereby inoculating against this avenue of attack. From a personalizing standpoint, imagine what would happen if you raised this issue to the beverage company representative—he or she would simply say, "Yes, that may be the case, but I noted in my conclusion that the program would be effective once the switchover is complete." This is an attractive answer because it raises a point that would be a difficult public relations issue to address. Regardless, this does not hurt the argument given by the beverage company representative, and that is the task at hand.

Answer choice (B): This is the correct answer. Most people select answer choice (E), but as you will see, (E) is incorrect. This answer undermines the representative's conclusion by showing that even after the switchover is complete, the threat to animals

from plastic rings will persist. Note the carefully worded nature of the conclusion—the representative does not say the threat from new plastic rings will be eliminated, but rather the threat from plastic rings, which includes both old and new rings.

Answer choice (C): This out-of-scope answer addresses an issue that is irrelevant to the representative's argument.

Answer choice (D): While this is nice information from a customer service standpoint (you do not want your six-pack of beer falling apart as you walk out of the store), this answer does not affect the conclusion because it does not address the threat of suffocation to animals. Also the passage clearly states that wild animals "often become entangled in the discarded rings"; not the rings in use.

Answer choice (E): This is the most commonly chosen answer. In this case, the answer preys upon those who fail to heed one of the most important things to remember in CR: "Read closely and know precisely what the author said. Do not generalize!" Many read the conclusion and think, "So when they start using these new rings, it will make things better for the animals." When these people get to answer choice (E), the answer looks extremely attractive because it indicates that the implementation of the new rings will also have a harmful effect. With this thinking in mind, many select answer choice (E) thinking it undermines the conclusion and they are certain they have nailed the question. However, the conclusion is specifically about suffocation, and answer choice (E) does not address suffocation. Instead, answer choice (E) is a deceptive one that attacks a conclusion that is similar but different than the actual conclusion. Remember, one of the rules for weakening arguments is to focus on the conclusion, and knowing the details of the conclusion is part of that focus.

Strengthen an argument

Strengthen questions ask you to identify the answer choice that best supports the argument. The correct answer choice does not necessarily justify the argument, nor is the correct answer choice necessarily an assumption of the argument, though in most cases it is. The correct answer choice simply helps the argument in some way.

Because Strengthen questions are the polar opposite of Weaken questions, the correct approach to supporting an argument is to help the author's conclusion. When evaluating an answer, ask yourself, "Would this answer choice assist the author in some way?" If so, you have the correct answer.

Look for weaknesses in the argument: This may seem like a strange recommendation since your task is to strengthen the argument, but a weak spot in an argument is tailor-made for an answer that eliminates that weakness. If you see a weakness or flaw in the argument, look for an answer that eliminates the weakness. In other words, close any gap or hole in the argument.

Many Strengthen questions require students to find the missing link between a premise and the conclusion. These missing links are assumptions made by the author, and bringing an assumption to light strengthens the argument because it validates part of the author's thinking.

Here's an example:

> **E.g. :** Advertisement: At most jewellery stores, the person assessing the diamond is the person selling it so you can see why an assessor might say that a diamond is of higher quality than it really is. But because all diamonds sold at Gem World are certified in writing, you're assured of a fair price when purchasing a diamond from Gem World.
>
> The reasoning in the advertisement would be most strengthened if which one of the following were true?
>
> (A) The written certifications of diamonds at Gem World are provided by an independent company of gem specialists.
>
> (B) The certifications of diamonds at Gem World are written by people with years of experience in appraising gems.
>
> (C) The diamonds sold at Gem World are generally of higher quality than those sold at other jewellery stores.
>
> (D) The diamond market is so volatile that prices of the most expensive diamonds can change by hundreds of dollars from one day to the next.
>
> The argument is constructed as follows:
>
> Premise: At most jewellery stores, the person assessing the diamond is the person selling it.
>
> Premise/Sub-conclusion: So you can see why an assessor might say that a diamond is of higher quality than it really is.
>
> Premise: All diamonds sold at Gem World are certified in writing,
>
> Conclusion: You're assured of a fair price when purchasing a diamond from Gem World.
>
> The first sentence contains a premise and conclusion that relies on the assumption that financial motivation might cause a person to lie about the quality of the item. According to the advertisement, at Gem World there is no such worry because the diamonds are certified in writing. Think for a moment—does that reasoning sound bullet-proof? If you were standing there in the store and you were told that Gem World has written certification, wouldn't you ask who does the certification? As soon as you do that in this question, the weakness in the argument becomes apparent. Then, since this is a Strengthen question, you can look for an answer choice that eliminates this

Takshzila
The centre of learning
www.takshzila.com

weakness. Answer choice (A) addresses the hole in the argument by indicating that the individuals who provide the written certification are not the same people who are selling the diamonds at Gem World.

Answer choice (A): This is the correct answer. As mentioned above, this answer addresses the separation of the certification writer from the seller and thereby strengthens the reasoning.

Answer choice (B): This is an answer many people keep as a Contender. The answer is incorrect because it fails to address the point raised in the first sentence, namely that the person assessing the diamond has a personal stake in the outcome. This "accountability" issue is the central point of the argument, and without knowing the source of the certifications, this answer does not strengthen the argument.

Answer choice (C): The argument asserts that a fair price is assured when purchasing a diamond at Gem World. No claim to comparative quality is made in the advertisement, and thus this answer does not strengthen the argument.

Answer choice (D): If anything, this answer may hurt the argument since it indicates that a fair price may not be obtainable at Gem World due to price volatility. If prices change daily, then Gem World may be selling diamonds at a price that does not reflect current market value. However, the answer choice specifically mentions "the most expensive diamonds" and there is no guarantee that Gem World carries diamonds in this price range. So, at best, the answer choice has no effect on the argument and is therefore incorrect.

Now a little tougher:

E.g. : Statistician: A financial magazine claimed that its survey of its subscribers showed that Indians are more concerned about their personal finances than about politics. One question was: "Which do you think about more: politics or the joy of earning money?" This question is clearly biased. Also, the readers of the magazine are a self-selecting sample. Thus, there is reason to be skeptical about the conclusion drawn in the magazine's survey.

Each of the following, if true, would strengthen the statistician's argument EXCEPT:

(A) The credibility of the magazine has been called into question on a number of occasions.

(B) The conclusions drawn in most magazine surveys have eventually been disproved.

(C) Other surveys suggest that Indians are just as concerned about politics as they are about finances.

(D) There is reason to be sceptical about the results of surveys that are biased and unrepresentative.

(E) Other surveys suggest that Indians are concerned not only with politics and finances, but also with social issues.

This problem is more difficult than the previous problem, in part because this is an Except question. Remember in an Except question the four incorrect answers strengthen the argument and the correct answer either has no effect on the argument or weakens the argument. It doesn't necessarily have to weaken the argument.

Here, a financial magazine has claimed that a survey proves that Indians are more concerned about personal finances than politics. The statistician attacks two elements of the survey—there was a biased question and the sampling was faulty—and concludes the magazine's claim is questionable.

Let us take a closer look at the statistician's two premises:

1. One question was biased.

The key to understanding this claim is the phrasing of the question in the magazine: "the joy of earning money." By describing politics neutrally but describing earning money as a fun activity, the question inappropriately suggests to the magazine reader that one activity is more interesting than the other. This bias undermines the integrity of the survey.

2. The sample was self-selecting.

A self-selecting sample is one in which individuals decide whether to participate. As you might expect, only those interested in the topic tend to participate and this creates a bias in the results. Because the survey was of subscribers to a financial magazine and not of the general Indian population, those participating in sample are not necessarily representative of Indians and thus the magazine cannot reliably draw a conclusion about Indians.

Hence, the statistician's position appears reasonably strong. Nonetheless, you are asked to eliminate four answers that will strengthen it further.

Answer choice (A): This answer asserts that the magazine has credibility issues and thereby supports the conclusion that there should be skepticism regarding the magazine's activities.

Answer choice (B): This answer attacks the integrity of magazine surveys, and therefore supports the idea that there is reason to be skeptical of this magazine survey. Frankly, this is a weak answer because the validity of surveys in other magazines do not necessarily reflect on the validity of this magazine's survey.
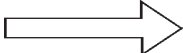
Answer choice (C): This answer supports the argument because other surveys suggest that Indians are not more concerned about finances than politics. Because this counters the claim of the magazine, the answer supports the statistician's conclusion that there is reason to be skeptical of the magazine's survey.

Takshzila
The centre of learning
www.takshzila.com

Answer choice (D): Because the statistician has shown the survey to be biased and unrepresentative, this answer choice supports the statistician's conclusion.

Answer choice (E): This is the correct answer. The answer has no impact on the statistician's argument because a third topic—social issues—was not part of the magazines' survey, nor does this answer suggest anything about the preference of Indians for finance or politics. Because the answer has no impact, it is correct in a Strengthen Except question.

Assumption Question

As must be already clear this type of question is a step early as compared to weaken/ strengthen questions. Whereas in weaken/strengthen questions you first have to figure out the assumption and then either negate it or replicate it, in assumption questions you just have to figure out the assumption and that's it. Because an assumption is an integral component of the author's argument, a piece that must be true in order for the conclusion to be true, assumptions are necessary for the conclusion. Accordingly, the relationship between the conclusion and the assumption can be described as:

Conclusion$_{Valid}$ $\Longrightarrow$ Assumption$_{True}$

Hence, the answer you select as correct must contain a statement that the author relies upon and is fully committed to in the argument. Think of an assumption as the foundation of the argument, a statement that the premises and conclusion rest upon.

Let's look at an example:

E.g. : In Western economies, more energy is used to operate buildings than to operate transportation. Much of the decline in energy consumption since the oil crisis of 1973 is due to more efficient use of energy in homes and offices. New building technologies, which make lighting, heating, and ventilation systems more efficient, have cut billions of dollars from energy bills in the West. Since energy savings from these efficiencies save several billion dollars per year today, we can conclude that 50 to 100 years from now they will save more than $200 billion per year (calculated in current dollars).

On which one of the following assumptions does the argument rely?

(A) Technology used to make buildings energy efficient will not become prohibitively expensive over the next century.

(B) Another oil crisis will occur in the next 50 to 100 years.

(C) Buildings will gradually become a less important consumer of energy than transportation.

(D) Energy bills in the West will be $200 billion lower in the next 50 to 100 years.

Focus on the final sentence of the argument, which contains a premise and conclusion:

Premise: Energy savings from these efficiencies [new building technologies] save several billion dollars per year today.

Conclusion: 50 to 100 years from now they will save more than $200 billion per year (calculated in current dollars).

So, according to the author, the new building technologies—which are already saving billions—will continue to do the same in the future and the savings will be even greater, relatively.

Answer choice (A): This is the correct answer. If the money-saving and energy-saving technology becomes too expensive to use in the next 100 years, the savings expected will not materialize. Because this idea would clearly weaken the argument, the author assumes that it does not exist, and answer choice (A) denies that the technology will become prohibitively expensive over the next century.

Answer choice (B): Although there has been an energy usage decline since the 1973 oil crisis, the author does not assume that there will be another crisis in the next 50 to 100 years. Look at the conclusion—does there seem to be a reliance on the idea in this answer? No.

Answer choice (C): Although this answer plays with the idea mentioned in the first sentence of the stimulus—that more energy is used to operate buildings than to operate transportation—no assumption is made that buildings will become a less important consumer of energy. True, buildings have saved billions in operating in costs, but the conclusion is about future savings and not about comparing buildings to transportation.

Answer choice (D): The argument is specific about technologies saving more than $200 billion per year; the author does not assume that the total bill in the next 50 to 100 years will be lower by $200 billion.

A little tougher:

E.g. : Doctors in Britain have long suspected that patients who wear tinted eyeglasses are abnormally prone to depression and hypochondria. Psychological tests given there to hospital patients admitted for physical complaints like heart pain and digestive distress confirmed such a relationship. Perhaps people whose relationship to the world is psychologically painful choose such glasses to reduce visual stimulation, which is perceived as irritating. At any rate, it can be concluded that when such glasses are worn, it is because the wearer has a tendency to be depressed or hypochondriacal.

The argument assumes which one of the following?

(A) Depression is not caused in some cases by an organic condition of the body.

(B) Wearers do not think of the tinted glasses as a means of distancing themselves from other people.

(C) Depression can have many causes, including actual conditions about which it is reasonable for anyone to be depressed.

(D) For hypochondriacs wearing tinted glasses, the glasses serve as a visual signal to others that the wearer's health is delicate.

(E) The tinting does not dim light to the eye enough to depress the wearer's mood substantially.

The answer choices are very interesting as they all relate to either the cause or effect, or both. Answer choices (A) and (C) are similar in that they both discuss what causes depression (the cause of the cause). But the author has made no assumption about what causes depression, only that depression causes a person to wear glasses. Therefore, both of these answers are incorrect. Similarly, answer choices (B) and (D) both discuss the effects of wearing glasses (the effects of the effect). Again, this is not a part of the author's argument. Because answer choices (A), (B), (C), and (D) discuss issues that occur either "before" or "after" the causal relationship in the conclusion, they are incorrect.

Answer choice (E): This is the correct answer. Answer choice (E) eliminates the possibility that the stated relationship is reversed. Remember, if the glasses actually cause the wearer to be depressed, this scenario would hurt the argument, so the author assumes the possibility cannot exist. Note how tricky this answer could be, especially if you had not been exposed to the way the test makers think about causality and assumptions. While it may take a bit of work to memorize the different assumptions inherent in causal arguments, the payoff is more than worth the effort.

Inference:

We have already discussed what an inference is – just remember that an inference is a deduction and that it is implied. So an inference is what *must* be true according to the passage.

Here's an example:

E.g. : Flavonoids are a common component of almost all plants, but a specific variety of flavonoid in apples has been found to be an antioxidant. Antioxidants are known to be a factor in the prevention of heart disease.

Which one of the following can be properly inferred from the passage?

(A) A diet composed largely of fruits and vegetables will help to prevent heart disease.

(B) Flavonoids are essential to preventing heart disease.

(C) Eating at least one apple each day will prevent heart disease.

(D) At least one type of flavonoid helps to prevent heart disease.

In this question inference is used as a synonym for conclusion.

The structure of this argument is:

Premise 1: Flavonoids are a common component of almost all plants,

Premise 2: a specific variety of flavonoid in apples has been found to be an antioxidant.

Premise 3: Antioxidants are known to be a factor in the prevention of heart disease.

The question stem is obviously a Must Be True, and to paraphrase, take a moment to consider what the elements in the stimulus add up to. To do so, consider the premises together, and look for the connection between the elements: the first and second premises have "flavonoid" in common, and the second and third premises have "antioxidant" in common. Take a moment to examine each connection.

The flavonoid connection between the first two premises proves to be uninformative. The first premise indicates flavonoids appear frequently in plants and the second premise cites a specific instance in apples.

The antioxidant connection in the last two premises is more revealing. The second premise indicates that a flavonoid in apples is an antioxidant, and the third premise states that antioxidants are a factor in preventing heart disease. Adding these two points together, we can deduce that the specific flavonoid in apples is a factor in preventing heart disease. Since that statement must be true based on the premises, we can attack the four answer choices with this paraphrase in mind. Note that if you did not see that connection between the premises, you would simply move on and attack each answer choice with the facts at hand.

Answer choice (A): This is an interesting answer choice, and most people take a moment before categorizing this as a Loser. The answer choice could be true, but it is too broad to be supported by the facts: nowhere are we told that a diet of fruits and vegetables will help prevent heart disease. Perhaps apples are the only fruit with the antioxidant flavonoid and there is nothing beneficial about other fruits and vegetables. And, eating a diet of fruits and vegetables is no guarantee that the diet includes apples. Regardless, this answer choice can be especially attractive because it plays on the general perception that fruits and vegetables are good for you.

Answer choice (B): This answer is also a Loser. Nothing in the stimulus supports the rather strong statement that flavonoids are essential to preventing heart disease.

Answer choice (C): Many people hold this answer as a Contender and then move on to answer choice (D). As it will turn out, this answer is incorrect because the language is too strong: the stimulus only stated that apples contain an element that was a factor in preventing heart disease, not that they definitely will prevent heart disease.

Answer choice (D): This answer is the closest to our paraphrase, and this is the correct answer. Notice how the language of this answer choice—"helps to prevent"—matches the stimulus language—"factor in the prevention."

Now a tougher one:

Takshzila
The centre of learning
www.takshzila.com

E.g. : In an experiment, two-year-old boys and their fathers made pie dough together using rolling pins and other utensils. Each father-son pair used a rolling pin that was distinctively different from those used by the other father-son pairs, and each father repeated the phrase "rolling pin" each time his son used it. But when the children were asked to identify all of the rolling pins among a group of kitchen utensils that included several rolling pins, each child picked only the one that he had used.

Which one of the following inferences is most supported by the information above?

(A) The children did not grasp the function of a rolling pin.

(B) No two children understood the name "rolling pin" to apply to the same object.

(C) The children understood that all rolling pins have the same general shape.

(D) Each child was able to identify correctly only the utensils that he had used.

(E) The children were not able to distinguish the rolling pins they used from other rolling pins.

The "rolling pin" problem above is a famous question from the 1990s that lured many people to incorrectly select answer choice (D). Answer choice (D) looks perfect at first glance, but the author never indicated that the children could identify only the utensils that they used. Rolling pins, yes; utensils, no. The correct answer choice is (B), which many students quickly pass over.

Let's examine each answer:

Answer choice (A): From the text, it seems possible that the children did understand the function of a rolling pin; certainly, they were able to identify the rolling pin they used.

Answer choice (B): This is the correct answer choice. The answer must be true because we know that despite being asked to identify all the rolling pins, each child selected only the rolling pin he had used. No two children picked the same rolling pin and therefore no two children understood the name "rolling pin" to apply to the same object.

Answer choice (C): Apparently not, otherwise logic would say the children would pick other rolling pins aside from the one they used.

Answer choice (D): Do not be concerned if you fell into this trap, but consider it a lesson for the future. The test makers smoothly slip "utensils" into the answer choice, and most students make the mistake of equating utensils with rolling pins. Yes, a rolling pin is a utensil, but there are other utensils as well, and the stimulus does not give us information about whether the children could identify those utensils. This is the essence of the Shell Game: you expect one thing and the test makers slip something quite similar but essentially different into its place.

Answer choice (E): This is an Opposite Answer. As indicated by the final sentence of the stimulus, the children were able to distinguish the rolling pin they used from the other rolling pins. This circumstance is exactly opposite of that stated in answer choice (E), which declares, "The children were not able to distinguish..." In this case, if you miss the "not," this answer choice is very attractive.

As has already been discussed in the box on the discussion of "inference", there is a lot of confusion in distinguishing between as assumption and an inference. The box should be of some help, and here is one more way to go:

Negate the Assumption:

If negating any answer choice affects/hampers the conclusion, then that answer choice has to be an assumption because, ass already discussed, the conclusion depends as much on the assumption as on the premise/s

Let's understand this 'negate the assumption' technique through an example:

> If one works hard on an everyday basis then one's chances of getting through an MBA institute of one's choice are increased considerably. However Rajat worked hard on an everyday basis but still couldn't get through the institute of his choice. Therefore this strategy is not helpful.

> The conclusion of the above argument is the last line: "Therefore this strategy is not helpful."

>> What is the above conclusion assuming?

>> That the aforementioned strategy is a guaranteed way.

>> This may or may not be true.

Now let's negate this assumption: The aforementioned strategy is not a guaranteed way.

What have we done by negating the assumption? We have simultaneously negated the conclusion that 'the strategy is not helpful'.

Conclusion:

As has been mentioned before conclusion and inference are used interchangeably.

Here's an example:

> **E.g. :** Light is registered in the retina when photons hit molecules of the pigment rhodopsin and change the molecules' shape. Even when they have not been struck by photons of light, rhodopsin molecules sometimes change shape because of normal molecular motion, thereby introducing error into the visual system. The amount of this molecular motion is directly proportional to the temperature of the retina.

> Which one of the following conclusions is most strongly supported by the information above?

> (A) The temperature of an animal's retina depends on the amount of light the retina is absorbing.

> (B) The visual systems of animals whose body temperature matches that of their surroundings are more error-prone in hot surroundings than in cold ones.

> (C) As the temperature of the retina rises, rhodopsin molecules react more slowly to being struck by photons.

> (D) Rhodopsin molecules are more sensitive to photons in animals whose retinas have large surface areas than in animals whose retinas have small surface areas.

> (E) Molecules of rhodopsin are the only pigment molecules that occur naturally in the retina.

Takshzila
The centre of learning
www.takshzila.com

The stimulus is a fact set. Part of the difficulty with this problem is the scientific subject matter. Many people are intimidated by the mention of rhodopsin, with which they are unfamiliar. As with the flavonoids in problem of the inference question, you do not need to know what rhodopsin is to complete the problem. The stimulus can be broken into several easily digestible parts:

Premise: Light is registered in the retina when photons hit rhodopsin molecules and the molecules change shape.

Premise: Due to normal molecular motion, rhodopsin molecules sometimes change shape without having been hit by light. This change causes errors in the visual system.

Premise: The amount of molecular motion is directly proportional to the temperature of the retina.

Answer choice (A): The stimulus does not indicate that the temperature of the retina depends on the amount of light. It could easily be affected by other factors, such as body temperature.

Answer choice (B): This is the correct answer. To prove this answer you must link together several pieces of information. First, the last sentence of the stimulus shows that the amount of rhodopsin molecular motion is directly proportional to the temperature of the retina, and the second sentence of the stimulus shows that this motion causes visual errors, so the higher the retinal temperature, the more errors in the visual system. The answer choice ties body temperature (remember, the retina is a body part) to the temperature of the surroundings and then rightly notes that hot surroundings would cause more visual errors than cold surroundings if body temperature matched those surroundings.

Answer choice (C): This is the most popular incorrect answer. The answer is wrong because we do not know that temperature causes the rhodopsin to react more slowly. Higher retinal temperature causes the rhodopsin molecules to change shape, but no mention is made of reaction time. This answer falls under the "New information" category.

Answer choice (D): Another New Information answer choice. Similar to answer choice (C), this answer fails because no information is given about the surface area of the retina. Answer choices (C) and (D) are great examples of how an answer can contain information unmentioned by the stimulus. These answers are somewhat attractive because there is nothing actively wrong about them and thus they could be true. To avoid them, always keep in mind that your goal is to find the answer that must occur based on the information in the stimulus.

Answer choice (E): While the stimulus focuses on rhodopsin, no indication is given that rhodopsin is the only naturally occurring pigment molecule—there could be others.

Complete the passage:

This question is exactly the same as inference or conclusion questions.

Takshzila
The centre of learning

Para Jumbles

Para jumbles are the most common type of questions in CAT and are perhaps unique to CAT. That is to say, perhaps no other test asks this type of question.

What are Parajumbles

Well, as the name suggests, it is a jumbled up paragraph and you have to re-arrange it to form a coherent paragraph. That doesn't sound like a big deal, but these questions remain almost impenetrable to most students – believe it or not.

The primary reason behind this is faulty reading skills, or – to put it bluntly – the lack of them altogether. So the solution is fairly straightforward – Read. If you do so the subsequent discussion will either be quite apparent or not be difficult to follow.

CAT asks para jumbles in many formats: 4-sentence types, 5-sentence types, 6-sentence types etc. Sometime one or two sentences can be fixed either in the beginning or the end or both; however mostly all the given sentences are jumbles. Don't worry about all this as if you pay attention to the theory below you will find that doing well in para jumbles is a matter of practice and good reading skills plus application of logical skills.

Concomitant Sentences

The dictionary defines concomitant as – occurring along with something else, accompanying.

So concomitant sentences are a set of two or more sentences that should always be together. It is in trying to figure out which sentences should be together that RC skills start playing a role. Let's see what all this means:

1. Opposites, Contradiction

Words like "however, but, nevertheless" etc tell us that there is something before, which is on the opposite lines:

a) However, that night a terrible wind was blowing at an estimated 80 miles an hour and it was weakening the structure.

b) This was an enormous structure supported by huge pillars.

c) As the train crossed the bridge, the structure collapsed, throwing the train into the water below and killing all 75 passengers.

d) At 7:30 p.m. on December 28th 1879, the train to Dundee carrying 75 passengers was speeding towards the newly-built Tay Bridge.

e) This disaster remains the worst bridge accident in the history of British railways.

Takshzila
The centre of learning
www.takshzila.com

All you need to do is just scan the above sentences and you can get a fairly decent idea about how they must be placed. For example 'a' starts with "however" and you can be quite sure that this cannot be the first sentence. So you go to 'b' and you'll see that it begins with "this was an enormous structure" and what you need to do is find something which is "this enormous structure", and you will see that in'd' there is a "Tay Bridge". Bingo! We've found it. So the Concomitant pair is "db". This itself will take you very close to the answer (because of the answer choices). You can now connect "however" with 'b' cause it is on the opposite lines. Also 'c' is directly coming out of 'a' and it makes sense that 'e' is the last sentence. So the answer is "dbace".

This is not necessarily the only way to go about it; you could have also tried to find out what is "this disaster" of e) or the fact that "all passengers" of c) should be after "carrying 75 passengers" of d). Not necessarily "dc" but that "c" should be after "d".

So basically it's a game of keywords and to be good at identifying keywords or to be able to connect them is a function of good RC skills. So start reading a lot.

Let's look at one more example:

a) Now it seems to have acquired a meaning

b) Till recently I thought it didn't

c) But the truth turns out to be more complicated

d) Originally, yes, it was meaningless

e) Does "Web 2.0" mean anything?

f) And yet those who dislike the term are probably right, because if it means what I think it does, we don't need it.

There are many clues here. One is 'but' of 'c'; where is it coming from? It seems it is coming from 'b'. Also you might think that'd' should be preceded with 'e', but that will leave no space for 'b'. So it should be 'eb' followed by 'c'. Chances are you would have found out the correct answer by now, had you been given four/five answer choices. Anyway let's move on. 'and yet' of 'f' is coming from 'a' which in turn is coming from'd'. So the answer is 'ebcdaf'.

E.g.: a) The lesson of history is that men never learn from history

b) Why are Middle East experts so unfailingly wrong?

c) Instead, they just keep repeating them

d) But Middle East experts, like the rest of us, should at least learn from their past mistakes

Just a glance gives us two quick clues: one is "instead" and the other is "but". The question one needs to ask is - "instead who keeps repeating what"? The answer can be pretty much found in "d"; so "dc" is concomitant. The "but" of "d" is coming from "a"; so "ad" is also concomitant. It must be obvious by now that "b" should begin. So the answer is "badc"

Takshzila
The centre of learning

Tip:
Don't try to read the sentences in detail as this will only confuse you. Try to scan fast for keywords and as soon as you find one, find out the other sentence which should form a concomitant pair with this one

2. Furthering an idea

Words like "moreover, similarly, also", etc carry forward the discussion or argument on the same or similar lines:

a) Similarly, some people who are poor at languages are excellent at computer sciences.

b) IQ tests only measure things that can be measured!

c) Many areas of human excellence, however, cannot easily be measured such as artistic and musical creativity, emotional maturity, keeping a cool head in emergencies, being able to impersonate other people, and inventiveness.

d) Students who have failed in language- or number-based GCSEs often do very well on university courses in the arts.

e) Some people may excel in these areas and yet perform poorly in tests that are language-based.

The word "similarly" in "a" tells us that there is something similar just before. A quick scan shows that it is "d". So "da" is the concomitant pair. The "however, cannot be easily measured" of "c" is coming from "can be measured" of "b". So we have "bc" In most cases knowing two concomitant pairs – like in this case – would give you the answer. However as we don't have answer choices here, let's go a little further. "these areas" of "e" is coming from the different areas talked about in "c". So we have "bce" now. Of course "bce" should be before "da" so the answer is "bceda".

E.g.: a) The attack is "deeply xenophobic"

b) "A twisted colon" is one of Franklin's explanations

c) An American critic who is used to his readers having their eyes only on American culture has seen them reach for an idiosyncratic English book for a discussion of grammar

d) Why should it have so provoked one of the New Yorker's leading writers?

e) But he also has a weightier cultural analysis

There are three clues in 'e': 'but', 'he' and 'also' – 'but' implies that something on the opposite side is being talked about; 'also' seems to take the same concept/argument etc. forward. 'be' makes sense as "twisted colon" is one explanation and then 'but' takes us to 'weightier cultural analysis' and 'also' means that there is another 'explanation'. The 'deeply xenophobic' is an extension of 'cultural analysis' of 'e'; it then is followed up with the explanation in 'c'; so 'eac'. 'b' is an answer to the question which is 'd'. Hence 'dbeac'.

3. Pronouns are of great help

Pronouns like "these, those, he, she, they etc"also are a great help.

a) Perhaps misguidedly and, not only in my case, certainly in vain, our teacher encouraged us to find emotion and even merit in the likes of Beowulf and The Dream of the Rood.

b) It would have been better all round if this part of the course had been separated off and introduced under another and unashamedly philological1 heading and literary considerations dropped.

c) At university I studied, lazily I fear the early history of our language and some of the works written in it before the year 1500.

Scanning should tell you that "this part of the course" in "b" is coming from "a", so the concomitant pair should be "ab" and "c" is the introduction of the course. So the answer is "cab".

E.g.: a) Make motorists pay to use the busiest streets

b) Eight dollars for cars, twenty-one dollars for trucks

c) Under the Mayor's proposal, an invisible line would be drawn around Manhattan from Eighty-sixth Street south to the Battery.

d) The basic idea behind congestion pricing is simple

e) Vehicles crossing this line on weekdays between 6 A.M. and 6 P.M. would be charged a fee

The "this line" of "e" connects with "an invisible line" of "c" making "ce" concomitant. The "basic idea" of "d" is "a", and "c" should follow "a". So the answer is "daceb".

E.g.:

a) A 19th century British Postal clerk decided to start writing 3,000 words each day so that he could author his very own first novel.

b) Among them, The Macdermots of Ballycloran (1847), Phineas Finn and He Knew He Was Right (both 1869).

c) This new habit paid off, and later Anthony Trollope published not one, but many novels

d) He placed his watch on the table and wrote before leaving the house every morning.

This is a perfect 'pronoun' question, in that it has many pronoun clues: the 'he' of'd' which should come from 'a'; the 'this habit' of 'c' which is 'he placed... morning' of 'd'. So we have two concomitant pairs: 'ad' and 'dc', making it 'adc'. The 'them' of 'b' are the 'many novels' of 'c'; so the answer is 'adcb'.

4. Sequential Ordering

Whenever someone is talking about lists or several things/reasons then the order is sequential. That is to say that the order in which the things are first mentioned is the order in which they are elaborated.

a) Politics – Not only does your manager want you to stay focused on your work, a manager in a different group may feel angry that you've identified what you think is a problem in his area

b) Importance – What may seem important to you - eg your kids walking alone across a busy street - may not seem as important or problematic to others.

c) Ownership – Usually someone else appears to own the problem, and if you attempt to take it on you may be working outside your area of focus.

d) I guess there are three relevant reasons: ownership, importance and politics.

The order of the three reasons in 'd' is 'ownership, importance, politics'. So the concomitant sentences are 'dcba' and that is the answer.

5. Chronological Order

Chronological order presents ideas according to the time in which they occurred. When you can identify that some sort of chronological order can be determined, try to follow that chronological order. "Signal" words that can help you in ordering events are:

first, then, next, after that, finally, while, soon, etc.

Of courses dates can be very helpful.

a) Returning to Buenos Aires in 1921, Borges rediscovered his native city and began to sing of its beauty in poems that imaginatively reconstructed its past and present.

b) Leaving there in 1919, the family spent a year on Majorca and a year in mainland Spain.

c) In 1914, on the eve of World War I, Borges was taken by his family to Geneva, where he learned French and German and received his B.A. from the Collège de Genève.

d) In 1938, the year his father died, Borges suffered a severe head wound and subsequent blood poisoning, which left him near death, bereft of speech, and fearing for his sanity.

This one is not difficult at all. All you have to do is arrange the sentences in chronological order which is 'cbad'.

Takshzila
The centre of learning
www.takshzila.com

E.g. :

  a) Then he went downstairs to eat breakfast.

  b) After that, he packed his lunch.

  c) First, he got dressed and brushed his teeth.

  d) Marty got up early to get ready for school.

  e) Finally, he went outside to wait for the bus.

  f) While he ate, he studied his spelling words for the spelling test he would take at school.

The only sentence this particular para jumble can begin with is 'd' which has to followed by 'first' and so 'c'; then 'a' should come followed by 'f'('while he ate'). Of course 'finally' should come last. So the order is 'dcafbe'.

6. Cause and Effect

Cause and effect is the relationship between two things when one thing makes something else happen. Understanding the cause/effect text structure is essential in many para jumbles.

  a) The world is undoubtedly warming.

  b) The scientific community has reached a strong consensus regarding the science of global climate change.

  c) This warming is largely the result of emissions of carbon dioxide and other greenhouse gases from human activities including industrial processes, fossil fuel combustion, and changes in land use, such as deforestation.

  d) This warming will have real consequences for the world, for with that warming will also come additional sea-level rise that will gradually inundate coastal areas, changes in precipitation patterns, increased risk of droughts and floods, threats to biodiversity, and a number of potential challenges for public health.

If you pay attention to the words you will figure out that 'largely the result of' of 'c' implies that it is the cause whereas 'will have real consequences' of 'd' means that it is the cause. Usually a cause will precede an effect. Also 'ba' is concomitant as the 'consensus'('b') that the scientific community has reached is 'a'. So the answer is 'bacd'.

Look for the signal words that show cause-and-effect relationships. Here are some common words that frequently signal cause and effect: because, so, so that, if... then, consequently, thus, since, for, for this reason, as a result of, therefore, due to, this is how, nevertheless, and accordingly.

Effects can form a chain in which one effect goes on to cause a second effect, which may then cause a third effect and so on. Study this example:

a) and the bird population declines

b) they destroy the habitats of birds

c) as a result, fewer baby birds are hatched

d) this reduces the number of nest sites

e) when people cut down trees to clear land

Cause 1: People cut down trees.

Effect 1: The habitats of birds are destroyed.

Effect 2: The number of nest sites is reduced.

Effect 3: Fewer baby birds are hatched.

Effect 4: The bird population declines.

So the answer is 'ebdca'.

The following exercise forms an integral part of the chapter. All the approaches as explained in the above theory is applied to the exercise and is explained in the explanations following the exercise. Read the explanations to all the questions to learn the application of the approaches.

Parajumbles Class Exercise

Directions: Each question comprises four sentences, A to D, but the order in which they were originally written has been lost and the sentences are now in the wrong order. Your task is to put the sentences into the correct order or original order.

1. a) The Greeks understood that comedy (the gods' view of life) is superior to tragedy (the merely human).

    b) But since the Middle Ages, western culture has overvalued the tragic and undervalued the comic.

    c) This is why fiction today is so full of anxiety and suffering.

    d) It's time writers got back to the serious business of making us laugh

    a) abcd   b) acbd   c) cabd   d) dabc

2. a) But we're in the 21st century now, the era of the genome

    b) We know he's going to say that people are the way they are partly for genetic reasons

    c) So when Robert Winston informs us, at the opening of each episode of the BBC1 documentary series Child of Our Time, that we're going to "find out what makes us who we are,"

    d) During much of the 20th century, it was considered impolite and unscientific to say that genes play any role in determining people's personalities, talents or intelligence.

    a) acbd   b) dacb   c) dcba   d) dcab

3. a) So we shouldn't be too hard on Winston when he occasionally makes it too

    b) For example, there are researchers who believe that a child's attachment to his mother in infancy sets the pattern for all his later relationships.

    c) If his mother gave him all the love and attention he desired, he'll do well in life because he has learnt to trust people.

    d) It's an error made by almost all developmental psychologists

    e) This assumption is built into most theories of personality development.

    f) The error is the assumption that what a child learns in his home environment is automatically carried along with him to other settings.

    a) abcdef   b) fedabc   c) dafebc   d) dafecb

4. a) And perhaps modified or abandoned, when they start to have a life outside the home

    b) Children seem to know instinctively that patterns of behaviour acquired at home must be cautiously tested

    c) It can be seen as early as age three

    d) The child quickly learns that crying brings one response from Mummy, but quite a different one from the other children at the day-care centre

    e) The influence of peers doesn't begin in the teenage years

    a) abcde   b) bacde   c) badec   d) baced

5. a) Losers have not been excluded, but given places in government, binding them into the system to prevent future rebellion.

    b) In recent times, almost all of Africa's nastiest wars have ended in local deals.

    c) Only in a few cases has a rebel or deposed head of state been punished.

    d) Victors have showed a reluctance to punish.

    a) bdac   b) bacd   c) bcad   d) bdca

6. a) Some feared that its western-inspired, universalist idea of justice might come into conflict with local forms of law, jeopardising the process of reconciliation.

    b) There are signs that these fears may turn out to have been justified.

    c) Now that the court has started to flex its muscles-issuing its first warrants, in October 2005, against five leaders of the Lord's Resistance Army in Uganda, and more recently making an arrest in the Democratic Republic of Congo and identifying suspects in Sudan

    d) The international criminal court (ICC) was set up in 2002 to prosecute individuals for genocide, war crimes and crimes against humanity.

    a) abcd   b) dacb   c) dabc   d) bdac

7. a) "Race" is not a clearly defined word.

    b) "Species" is different.

    c) There really is an agreed way to decide whether two animals belong in the same species: can they interbreed?

    d) The interbreeding criterion gives the species a unique status in the hierarchy of taxonomic levels.

    e) Above the species level, a genus is just a group of species whose members are pretty similar to each other

    f) No objective criterion exists to determine how similar they have to be, and the same is true of all the higher levels: family, order, class, phylum and the various "sub-" or "super-" names that intervene between them.

    a) fedcba   b) abdcef   c) abcdef   d) fecdba

8. a) Gerin oil (or Geriniol to give it its scientific name) is a powerful drug which acts directly on the central nervous system to produce a range of characteristic symptoms, often of an antisocial or self- damaging nature.

    b) Historically, Geriniol intoxication was responsible for atrocities such as the Salem witch hunts and the massacres of native South Americans by conquistadores.

    c) The four doomed flights of 11th September were, in a very real sense, Gerin oil trips: all 19 of the hijackers were high on the drug at the time.

    d) If administered chronically in childhood, Gerin oil can permanently modify the brain to produce adult disorders, including dangerous delusions which have proved very hard to treat.

    e) Gerin oil fuelled most of the wars of the European middle ages and, in more recent times, the carnage that attended the partitioning of the Indian subcontinent and, on a smaller scale, Ireland.

    a) acdbe   b) adceb   c) abdec   d) adcbe

9. a) Three terms that reflect the sea change in news gathering and delivery.

    b) But what does it mean at the ground level

    c) Those are questions newsroom leaders and their staffs confront daily.

    d) Continuous news desks. 24/7 news cycles. Convergence.

    e) How do reporters juggle new responsibilities while feeding the insatiable maw of the news machine?

    a) abcde   b) caebd   c) dabec   d) bacde

10. a) This is especially true at the Prado, owing to its incomparable holdings of El Greco, Rubens, and Vel zquez

    b) One can even look from the exhibition space into the main gallery of Vel zquez and thus view almost simultaneously Tintoretto's monumental Washing of the Feet and the painting it did so much to inspire, Las Meninas.

    c) Three artists who drew the deepest inspiration from Tintoretto's example

    a) acb   b) cba   c) cab   d) abc

Takshzila
The centre of learning
www.takshzila.com

11. a) This would give one an idea of the terrain (which has not changed much), and the wildlife (which has declined drastically over the decades) that the area could support

    b) The Talla Des man-eater, which roamed for eight years and killed 150 people, had two grown-up cubs when Corbett hunted it down.

    c) Anyone who plans a visit to these areas should read Corbett's writings on the Talla Des, Chuka and Thak man-eaters.

    d) During Corbett's time, the ranges of the man-eaters he shot were a part of a much larger landscape that stretched along the Himalayan foothills and supported large populations of various species

    a) cabd   b) cadb   c) cbad   d) cdba

12. a) A DOCUMENTARY film that treats a serious subject with a sense of fun, especially when the issue is as intimate as people's flushing habits, is rare.

    b) Faecal Attraction does precisely that.

    c) Screened recently in New Delhi, the film takes an unflinching view of sewage - what it is doing to our rivers and what it might soon do to our cities.

    d) The 32-minute film opens with a dark screen and a dialogue between two roadside defecators - with much banter and little embarrassment about the act itself or the hygiene associated with toilet activities.

    e) It then cuts to an obviously posh toilet with expensive fittings and the ambient noise of a hundred flushes, and leads to the Yamuna river, reduced to a gutter thanks to all the millions of gallons of filth that is poured into it.

    a) abcde   b) abced   c) abedc   d) eabcd

13. a) For instance, all over India more than 60 per cent of children are in school, but schoolchildren constitute only 20 per cent of the survey's sample.

    b) Three of these are vulnerable groups that do not form a large proportion of the population, which may be why the results are startling.

    c) As it gives equal weightage to each, the survey cannot apply the findings to the entire population.

    d) Essentially, five groups of equal sample size were interviewed for the survey - children in school, children out of school and at home, street children, working children and children in institutions.

    e) A reason for the alarming findings could be the fact that the study has focussed on the most vulnerable groups of children and has not taken a sample that is representative of the total child population.

    a) edcba   b) edcab   c) dcbae   d) decba

14. a) A major portion of the report consists of detailed assessments of the investments required.

   b) An obvious answer is that whether it is improving transportation, providing power supply, increasing telecommunication services, or supplying clean and safe drinking water, enormous investment and expenditure are required.

   c) For full coverage of telecommunication services the estimated investment, spread over a few years, is of the order of Rs.92,700 crore; of power, Rs.55,200 crore; of roads, Rs.5,890 crore; of water and sanitation, Rs.3,780 crore.

   d) Then why is it that in a democratic country like India the rural areas where the vast majority of the population lives are so deficient in infrastructural facilities of all kinds?

   e) These are huge amounts, but not beyond the reach of a country whose GDP is of the order of Rs.3,250,000 crore annually (and growing at over 9 per cent every year!).

   a) cabde   b) cabed   c) dbace   d) dbaec

15. a) Gilroy largely succeeds through the inscription within hermeneutical and rhetorical systems to counter the hegemonic bias of centricism with the aim of abolishing racist presuppositions in the study of a society moving towards a post-Empire "convivial culture", but always with streaks of "melancholia"

   b) Gilroy's account focuses on the political debate surrounding multiculturalism, raising questions whether the institutions of liberal democratic government make room for the recognition of specific cultural traditions

   c) These issues are taken up in pressing debates on nationalism and identity, on problems of recognition and the democratic constitutional state

   d) Drawing on philosophy's long-standing concern with pluralism and relativism, his views signal the advent of a more inclusive, tolerant and genuinely democratic society

   a) bcad   b) bdac   c) bacd   d) bcda

16. a) Anyone even remotely associated with cricket knows that the high season in the Caribbean is between December and March, when there's little humidity and virtually no rain

   b) Ideally, this tournament, cricket's grand event, which comes only once in four years, should have been played in February-March

   c) So why wasn't it?

   d) The answer is greed, primarily

   e) None of the teams-or more properly, the cricket boards-is willing to cut short on more financially profitable international series to accommodate the World Cup, so we end up playing in the Caribbean in April, a frankly ridiculous situation.

   a) abced   b) abcde   c) cdeab   d) cdeba

17. a) He accuses vice-chancellor P.K. Abdul Aziz of fudging details in his dossier that earned him his doctor of science (DSc) degree in 2004

   b) He alleges that Aziz cited collective work, specially those where he is not the leading author, as his own

c) He also passed off his writing, published in magazines, as research papers that were carried in

d) Another high-profile complaint before the SSV this year has come from a former director of an institution under the Cochin University of Science and Technology scientific journals

a) dabc   b) dbca   c) abcd   d) cabd

18. a) And why do so many violent offenders return to crime after serving time in prison?

b) Are these individuals incapable of any other behaviour?

c) We have evaluated the results of studies conducted around the world, focusing on acts ranging from fistfights to murder, in search of the psychobiological roots of violence

d) Our key conclusion is simple: violent behaviour never erupts from a single cause

e) But what drives one person to kill, maim or abuse another, sometimes for little or no obvious reason?

a) eacdb   b) abcde   c) cadbe   d) eabcd

19. a) To contest the narrow view of rational behaviour and cognitive processes taken by economists and many political scientists.

b) I crafted this game, "Traveller's Dilemma, in 1994 with several objectives in mind.

c) To challenge the libertarian presumptions of traditional economics

d) Scenarios of this kind, in which one or more individuals have choices to make and will be rewarded according to those choices, are known as games by the people who study them (game theorists).

e) And to highlight a logical paradox of rationality.

a) dbeac   b) dbace   c) bcaed   d) baedc

20. a) Obviously, we need a certain minimum diet to survive.

b) But overabundance is also a problem, as we learn in banner headline after headline about the detrimental effects on the cardiovascular system and other areas of the body.

c) But is that so?

d) In his article, W. Wayt Gibbs explores the question, "Obesity: An Overblown Epidemic?"

a) abcd   b) acbd   c) bcda   d) bdca

21. a) Understanding the structure involves seeing how parts function and how they interconnect.

b) For just as the engineer studies the structure of material things, so the philosopher studies the structure of thought.

c) I would prefer to introduce myself as doing conceptual engineering.

d) I suspect that all philosophers and philosophy students share that moment of silent embarrassment when someone innocently asks us what we do.

e) The word "philosophy" carries unfortunate connotations: impractical, unworldly, weird.

a) cbaed   b) decba   c) abcde   d) edcba

Takshzila
The centre of learning

22. a) There are authoritative tide tables I can consult.

    b) I may know roughly how they are produced.

    c) And if all else fails, I could go and measure the rise and fall of the sea myself.

    d) If someone asks me when it is high tide, I know how to set about getting an answer.

    a) abcd   b) cbad   c) dabc   d) dbca

23. a) It is the time in which we cosset our mental health.

    b) And our mental health is just good in itself, like our physical health.

    c) A lot of life is indeed a matter of raising more hogs, to buy more land, so we can raise more hogs, so that we can buy more land.

    d) The time we take out, whether it is to do mathematics or music, or to read Plato or Jane Austen, is time to be cherished.

    a) dbac   b) dabc   c) cdab   d) dcba

24. a) We might say: it all began on 10 November 1619.

    b) Of course, it didn't, really, begin in 1619, for Descartes was not the first.

    c) The problems Descartes raised for himself are as old as human thought.

    d) The true path required sweeping away all that he had previously taken for granted, and starting from the foundations upwards.

    e) On that date, in the southern German town of Ulm, the French mathematician and philosopher Ren, Descartes (1596-1650) shut himself away in a room heated by a stove, and had a vision followed by dreams, which he took to show him his life's work: the unfolding of the one true way to find knowledge.

    a) abcde   b) aedbc   c) abedc   d) ecdab

25. a) Driving at random or in the middle is not an equally good solution - it is no solution at all - to the problem of coordination.

    b) The British drive on the left and Americans on the right.

    c) But it is not just us that we do drive exclusively on the one or the other.

    d) Each has hit upon an equally good solution to the essential problem of coordinating traffic.

    e) Driving on the one side is "just us".

    a) abdec   b) bdeca   c) dbaec   d) ebcda

Explanations to PJ class ex.

1. a

'ab' is concomitant as 'but' of 'b' contrasts the western culture's overvaluation of 'the tragic' and undervaluation of 'the comic' with the Greek's in 'a'. The 'This is why' of 'c' is an extension of 'b'; so 'abc' is concomitant. 'd' is provided as a solution and so should end the paragraph.

2. b

The quickest clue is the 'he' of 'b' who can be none other than 'Robert Winston' of 'c'; so 'cb' is concomitant. This eliminates answer choice"d". Two of the remaining answer choices start with'd' and one with 'a'. Only a glance should tell us that 'd' should be the first sentence, but if you still want to confirm then the 'but' of 'a' is in contrast with 'd' as 'in the 21st century' 'genome' is important as against what it was 'during much of the 20th century'. So 'da' is concomitant. This itself gives us the answer choice "b".

3. c

This is one of those tough ones where nothing seems to make sense, but if you remember the theory part then it shouldn't be that difficult. This para jumble is a perfect example of why you should not try too hard to look for a starting sentence. The para jumble can be picked up anywhere from a bigger paragraph.

Sentence 'e' says 'this assumption' which is coming straight from 'f' making 'fe' concomitant. One answer choice gone; two more to go. Some of you might think that 'df' or 'fd' should be concomitant but that should not be too much of a problem as neither is there in any answer choice. Scanning should take you to 'makes it too' of 'a' and you need to ask what is 'it'? 'it' is the 'error made by almost development psychologists'(d) which 'Winston' also makes. So 'da' is also concomitant. The 'his' of 'c' is 'a child' of 'b', and so 'bc'. The 'For example' of 'b' is an example of 'e'. Hence answer choice "c".

4. c

The question you need to ask, after scanning, is - What is 'modified or abandoned' in 'a'? The answer is 'patterns of behaviour' of 'b'; so 'ba' is concomitant. The other question is - What is this 'it' that 'can be seen as early as age three'(c)? The answer is 'influence of peers' in 'e'; so 'ec'. This straight away gives us the answer as "c".

5. a

Here is something that can teach you something important about para jumbles in particular and writing in general. You'll notice that 'c' is opposite to the other three sentences; while 'a', 'b', and 'd' are talking about rebels not being punished etc. 'c' says that only a few have been punished. That means that 'c' should stand alone and in this case it should be the last. Look at the answer choices and you have found your answer.

6. b

This is one of those para jumbles wherein the starting sentence is so conspicuous. It is obvious that 'd' should start and so that leaves us with two answer choices. The 'now' of 'c' cannot come at the end and so the answer is "b".

7. c

Here is one of those para jumbles that look very difficult but which are fairly simple. All the other sentences, apart from 'a', are talking about species. So 'a' should be apart and clearly 'b' follows 'a' (Race is not clearly defined, but species is different). 'c' answers how is it different. So 'abc' is concomitant. That itself gives us the answer "c".

8. d

'd' is carrying forward the explanation of 'a'; so 'ad' is concomitant. That leaves us with two answer choices "b" and "d". 'be' is also concomitant as 'e' takes the 'historically.' discussion of 'b' forward. So answer choice "d".

9. c

This is very simple. The question 'which three terms' when asked to 'a' can be answered by 'd'. So 'da' is concomitant which is there in only one answer choice - "c".

10. a

Just a glance can tell you that the 'three artists' of 'c' are coming from 'a'; making 'ac' concomitant. There is just one answer choice with that pair.

11. b

This is one of those that seem to be fairly difficult; however in this case one work has already been done for you which is that each answer choice begins with 'c'; so no worries about wondering what is the first sentence. Then you need to ask what 'would give one and idea.'(a). The answer is 'c' and so 'ca' is concomitant. This leaves us with two answer choices : "a" and "b". Now 'd' should follow as it is talking on the same lines: terrain, landscape etc. whereas 'b' is about a particular man-eater - The Talla Des man-eater. So the answer is "b".

12. a

'Faecal attraction does precisely what?' The answer can be found in 'a'; so 'ab' is concomitant. Then you can find any concomitant pair. So 'the film' of 'c' is 'Faecal Attraction' of 'b' making 'bc' concomitant. Also 'it then cuts' of 'e' has to follow 'd'. So the answer is "a".

13. a

This is a tough one. The 'for instance' of 'a' is giving an example of 'b', that "three of these. do not form a large proportion". So 'ba' is concomitant. There is one more thing you can learn from this particular para jumble: if you try to find 'the alarming findings' mentioned in 'e', you won't be able to. What does this tell you? That this particular para jumble has been picked up fro 'e' onward. So 'e' is the starting sentence. This and the fact that 'ba' is concomitant give us the answer choice "a".

Takshzila
The centre of learning

14. c

This is a perfect example of a para jumble that looks difficult but can be done very quickly. Scanning should take you to 'these are huge amounts' in 'e' and your question is 'Which huge amount?' The answer is just a glance away because only 'c' is talking about these amounts. So 'ce' is concomitant. This is there in only one answer choice - "c".

15. d

Ask 'which issues' in 'c' and the answer is 'b'; so 'bc' is concomitant. That leaves us with two answer choices: "a" and "d". In 'c' 'these issues are taken up in pressing debates' in which 'Gilroy largely succeeds' in 'a'. So 'ca' is concomitant. Hence answer is "d".

16. b

The question of 'c' is asked to 'b'; so 'bc'. That leaves us with two answer choices - "a" and "b". Now 'd' is the answer to 'c' making 'cd' as concomitant. Hence answer is "b".

17. a

Aziz has to follow the full name P.K. Abdul Aziz so 'ab' is concomitant. One more way is that 'alleges' will follow 'accuses'. The 'he' of 'a' is 'former director' of 'd'; so 'da' is concomitant.

18. d

If you ask what is 'e' contradicting, you won't find the answer. That means 'e' should be the starting sentence. That leaves us with two answer choices. Now 'ab' is concomitant as 'these individuals' and 'any other behaviour' of 'b' is coming from 'a'. So the answer is "d".

19. b

If you ask 'scenarios of which kind' from 'd' you won't find an answer; so 'd' should start. Now between answer choices "a" and "b" the answer should be "b" as the 'and' of 'e' should be the last of the reasons given by the author.

20. a

Given the fact that we have only two starting options - 'a' and 'b', it is obvious that 'a' should start. Now we are left with two options. Now it should be either 'ab' or 'ac' and 'ac' makes much more sense. Also 'cd' makes sense as 'd' is an extension of the question asked in 'c'. So the answer is "a".

21. d

Scanning through the sentences will give the link words 'structure' 'engineer/ engineering' in 'a' 'b' 'c' which can then be arranged as 'cba' since 'c' talks of 'conceptual engineering' and is further explained in 'b' and the word 'structure' introduced in 'b' gets explained in'c'. 'ed' concomitant, link word is philosophy, 'e' comes first as it is an introductory statement.

This leaves answer choices a and d both of which contain both concomitant pairs. To identify their order, consider the 'prefer' in sentence 'c' which signifies that one option has been spoken of before. Hence 'ed' comes first.

22. c

'd' is posing a question and 'c' is suggesting the last resort 'if all else fails' Answer choice c is the only choice starting with 'd' and ending with 'c'.

23. c

'd' and 'a' contain a link word 'time'. 'd' defines this time first while 'a' contains a reference 'it' to this time. Hence 'da' concomitant. 'b' follows 'a', link words-'mental health'.

24. b

This can be tricky. The '1619' in both 'a' and 'b' might lead one to think they are concomitant. But 'e' follows 'a' elaborating what happened (and also introducing the full name of Rene Descartes). 'd' follows 'e', link words- true way/ true path. Hence 'aed' concomitant.

25. b

'd' starts with each while 'b' mentions two entities. Hence, 'bd' concomitant. 'e' and 'c' have the link word 'just us'

But both answer choices a and b contain both these pairs. However 'a' is talking of '.is not an equally good solution' which means that it follows from the discussion of the other solutions rather than preceding it.

Answer Key

Deductive Logic Class Exercise

1. c	2. d	3. a	4. a	5. b
6. c	7. a	8. a	9. a	10. a
11. c	12. c	13. b	14. a	15. d
16. c	17. d	18. c	19. c	20. a
21. d	22. c	23. d	24. c	25. a

Parajumbles Class Exercise

1. a	2. b	3. c	4. c	5. a
6. b	7. c	8. d	9. c	10. a
11. b	12. a	13. a	14. c	15. d
16. b	17. a	18. d	19. b	20. a
21. d	22. c	23. c	24. b	25. b

Takshzila
The centre of learning

Check-out our online courses at
www.takshzila.com

We also have video lessons at
youtube.com/LearnAtTakshzila